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BAR
Bureau of Automotive Repair

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Bureau of Automotive Repair
Engineering and Research Branch
10949 North Mather Drive, Rancho Cordova, CA 95670
916.403.0315 Telephone
916.464.3425 Fax
www.smogcheck.ca.gov

BAR OBD Inspection System Comments, Questions and Answers

Comments:

1. In paragraph 3.2.31.2 the term "comprehensive components" is used but no defined. This is small but it needs to be clarified.

   The pertinent requirement is 3.2.31.3. The Comprehensive Component Monitor (CCM) is one of the three continuous monitors that the OBDII System evaluates. If the NWA is only seeing the CCM, the NWA will command the DAD to end communication on the current protocol and begin on the next protocol.

2. The DAD specification still has business requirements in it. Please see 3.1.8.1 where it requires the provision of "no cost" updates. Another example is at 5.1.5 where the cost of the certification fee is stated. If you want to separate business requirements from how to technical requirements, than cost issues should be in the NWA-DAD Business Requirements document not in the DAD specification.

   There are three documents that are related to the BAR DAD. The first is the "BAR OBD Inspection System Data Acquisition Device Specification", which contains the requirements that potential DAD Vendors must meet. The second document is the "BAR DAD Interface Specification" which contains the method and form in which the DAD must communicate with BAR's Smog Check software, known as the NGET Web Application (NWA). The potential DAD Vendors are required to produce DADs which use this Interface Specification. The third document is the "NWA-DAD Business Requirements", which details the business functions that will be accomplished using the DAD. These business functions will be accomplished by the **BAR's NWA Contractor and the BAR**. It is recommended that DAD Vendors read and understand the "NWA-DAD Business Requirements" document, to grasp the depth and breadth of the service that the DAD can expect in the Smog Check Program.

3. In many places the DAD specification refers to the DAD specification, please see 3.2.36 for an example of this where it states "per the BAR DAD Interface Specification". This is probably the result of cut and paste editing from the NWA-DAD Business Requirements specification.

   The "BAR DAD Interface Specification" is a distinct and separate document from the "BAR OBD Inspection System Data Acquisition Device Specification".

4. The testing requirements are generally much better than the previous specification but one issue that could occur is the tests in paragraph 3.2.61 describes driving over the cable but no mention on tire configurations or tire pressure. I like this type of testing, but it needs to address tire type and tire pressure to avoid arguments and legal problems later on. Single or dual axle? Large soft low pressure tires or cold high pressure tires?

   The BAR will review this requirement. The BAR's intent here is to subject the DAD's to the same type of use that may be seen in a real world shop environment. Stations will be testing vehicles with up to a 14,000 lb. GVWR.

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5. Regarding the NWA-DAD Business Requirements Specification version 00.0003. Due to the splitting off of part of this specification to make the NWA-DAD Business Requirements there is now the possibility of conflicts between the two specifications. There are many requirements for the DAD in NWA-DAD Business Requirements document. One good example of DAD requirements in the NWA-DAD Business Requirements document at paragraph 3.2.32. Any sentence in the NWA-DAD Business Requirements document that starts with "the DAD shall be capable of ..." is a requirement for the DAD. From my experience with writing an SAE specification you never want two places defining the same thing because you have the risk of only one place getting changed during updates.

   The requirements within the “NWA-DAD Business Requirements Specification” are between BAR’s NWA Contractor and BAR. Any “DAD shall….” Requirements are included to give BAR’s NWA Contractor a reference of what they can expect the DAD to do. In addition, the document is in draft form and will be revised and finalized as time moves on.

6. Regarding the NWA-DAD Business Requirements Specification version 00.0003. In paragraph 3.2.161 the DAD shall do a functionality test when requested by the NWA. This will need some human effort as well to connect the cable to the tester connection.

   Agreed, the NWA screens will instruct the Smog Check Technician to connect and disconnect the DAD during the functionality check.

7. The SAE J1962 document has been updated and is currently at the SAE Motor Vehicle Council for approval. It will then be published shortly thereafter. Publication should coincide closely with the full release of your document. You may want to look into this.

   The BAR will monitor the progress of the SAE J1962 document and determine if the version will be updated in the “BAR OBD Inspection System Data Acquisition Device Specification”.

8. The link to the VW K-line document at the OBD Clearinghouse, in section 3.2.21.1, should point to “get_file&id=1380”, 1343 was a duplicate with missing information inside.

   Thank you, this has been fixed.

9. Regarding 3.2.84 Alternate DAD Power: As a leading manufacturer of OEM and aftermarket scan tools and vehicle communication interfaces, we believe this requirement is problematic, while creating complexity and cost for the DAD. We suggest a light (LED) on the tool that indicates Power is present at PIN16. If the LED is not lit, the vehicle should be repaired to be compliant with J1962.

   We believe the purpose of this requirement is BAR’s reluctance to fail a vehicle if the only problem is no power at Pin 16 on the DLC. It becomes problematic when a vehicle fails the OBDII test (DTCs or Not Ready) AND the DLC fuse is blown.

   It appears a MFG could comply with this requirement by adding an adapter to the DAD that obtains power from the accessory plug on the vehicle (AKA ‘cigarette lighter’, if present). However, many vehicles (e.g. GM) use the same fuse for that circuit as Pin 16 (note, there would

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still be no power). Therefore, the requirement adds cost and variables while appearing to provide no benefit.

The 12VDC signal at Pin16 of the DLC is an integral part of the OBDII system on the vehicle. We feel if there is no power at pin 16 of the DLC, the problem should be corrected.

Thank you for your suggestions.

10. Regarding Appendix B Decertified Statement: We believe the third bullet item - "At the end of the one year certification period, the DAD will be decertified" should be reworded to something similar to the following: "At the end of the one year period, the DAD may be decertified if the following conditions are not met"… and then list the conditions.

    Thank you for your suggestion.

11. <Vendor's Name> is aware that several of the protocols have timeouts that can be as long as a minute, which may result in an overall test time that is considerably longer than existing OBDII tests now, particularly if the NWA attempts to interrogate parameters and modes that are not supported, not available, not valid items, or have lengthy response times.

    Thank you for your comment.

12. <Vendor's Name> feels that the DAD manufacturers will need to make extensive use of logging to diagnose potential communication/interrogation failures and that these logs should be transmitted directly from the DAD to the DAD manufacturer.

    The DAD Vendor logs will be made available to the DAD Vendor. The BAR will investigate the possibility of automatically forwarding the DAD Vendor logs.

13. We understand from the Overview (2. On Board Diagnostic (OBD) Data Acquisition Device (DAD) Overview) that the NWA will control the Smog Check inspection. We also note that the NWA – DAD Business Requirements document Section 3.1.1 refers to "BAR DAD Interface Specification" document as the description of the services and parameters for communication between the NWA and DAD. If the BAR DAD Interface Specification is completed, it needs to be published and posted publically as soon as possible. To accomplish certification, the DAD Vendor's units will have to communicate with the NWA, and this specification appears to be the key document for Vendors to understand the connection method, calls, message format(s), serial-to-asynchronous message correlation method, and data passing parameters at a minimum. It is not possible for Vendors to successfully certify DAD units without prior publication of this information.

    The BAR DAD Interface Specification is currently available in draft form. In order to receive the BAR DAD Interface Specification, the DAD Vendor must complete the Confidentiality Agreement in Appendix C and the DAD Vendor must submit a non-refundable deposit equal to the DAD Certification Fee, which is $10,000. This deposit will be applied towards the DAD Certification Fee. The DAD Vendors will work with BAR and BAR's NWA Contractor to finalize the BAR DAD Interface Specification.

14. (2.On Board Diagnostic (OBD) Data Acquisition Device (DAD) Overview) - We understand that the OBD DAD specification does not extend to other necessary OIS devices such as bar code scanner and printers. However, with respect to printers, our practical experience is that BAR would be well advised to create specification documents with at least minimum requirements for these devices as well. As a consumer affairs organization focused on protecting consumers, BAR

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has an interest in making certain that test documents given to consumers, especially the Vehicle Inspection Report (VIR) are permanently printed, for instance through xerography rather than the various other impermanent methods of printing (pigments, dyes, etc.). The fading, discoloration and corruption due to water exposure invalidate the data printed using these impermanent methods.

Thank you for your suggestion. BAR does plan on publishing guidelines on the other equipment as well as a list of devices known to work with the OIS.

15. Section 3.2.2 – editorial: SAE J1978 document is currently being opened for updates. If there are any desired changes then please submit changes to the Task Force chairman.

    Thank you for your comment.

16. Section 3.2.5 – editorial: a more recent version of SAE J1979 recommended practice document dated February 2012 is currently available.

    Thank you for your comment.

17. Section 3.2.7.1 – modify the current sentence to read “If collected, the log file shall be automatically sent to the NWA, and then automatically on to the DAD supplier”

    The DAD Vendor logs will be made available to the DAD Vendor. The BAR will investigate the possibility of automatically forwarding the DAD Vendor logs.

18. BAR appears to desire DAD communication to a vehicle emission ECU system (eg. OBD II) regardless of any noncompliant shortcomings that the vehicle communication system may have. This approach runs counter to industry efforts to ensure that proper emission ECU to external test device communications are implemented, which are currently tested using SAE J1699-3 Golden Scantool. BAR should consider only supporting noncompliant systems when the issue is known, the issue is released into public information (such as SAE J1699-4 Generic Scan Tool Anomalies), the issue is testable, and each noncompliance condition is tested on each DAD device. The approach to noncompliance should not be left to each DAD supplier.

    Please see the paragraph under “Connectivity Rate” for information on how the BAR will deal with this process.

19. Does BAR have a plan to test the DAD connectivity rate as a part of the initial certification process? This seems to be not practical from our experience. It seems that only after the DAD is deployed to the field for some period of time will BAR be able to assess if the DAD is able to successfully meet the connectivity requirement. If the DAD supplier is not able to meet the requirement, or BAR does not have confidence the supplier will be able to meet the requirement, we assume BAR will not grant the Supplier the annual Recertification. As such, those inspection stations that purchased the DAD from this supplier will no longer be allowed to use the DAD and will be required to purchase a new, certified DAD. Is our understanding correct?

    The understanding is correct.

20. If this high level connectivity is an important consideration for BAR, we suggest considering a business model where by BAR evaluates and selects a single supplier for the DAD (like OEMs do for their dealership service bay solutions) vs. the supplier certification model outlined in the DAD specification.

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Thank you for your comment.

21. Also note that inside the latest specification for SAE J1979 there may be additional Mode $09 Info Types that could be of use to an I/M program.

    Thank you for your comment.

22. Section 3.2.73 – note that SAE J1962 document is currently under revision. A review of connector hardware dimensions against the BAR DAD cable requirements might be a good check.

    Thank you for your comment.

23. Section 3.2.75 thru 78 – note that SAE J1962 document is currently under revision. A review of connector hardware dimensions against the BAR DAD cable requirements might be a good check.

    Thank you for your comment.

24. Given the character of the BAR OIS program and the associated performance requirements (in particular, the connectivity rate, the ability to support non-compliant vehicles and the technical support services) it seems a typical “single-source” supplier business model would be more practical vs. a business model which attempts to certify multiple DAD suppliers – the DAD is not a commodity device like a bar code reader.

    Thank you for your comment.

25. Regarding BAR NWA-DAD Business Requirements Specification portion, Version 00.0003, Section 3.1.1.2 – Terms used results in an unclear requirement. Perhaps rephrase “…shall include capturing last request message followed by response message which contained the error”. Note that obtaining the entire communication sequence or message content and storing that data into memory may not always be possible due to timing of when the link was interrupted.

    Thank you for your comment. BAR will update the requirement.

26. Regarding BAR NWA-DAD Business Requirements Specification portion, Version 00.0003, Section 3.2.48 – please note that a newer version of SAE J1979, dated February 2012, is available for reference

    Thank you for your comment.

27. Regarding BAR NWA-DAD Business Requirements Specification portion, Version 00.0003, 3.2.55.1. To keep consistent with automotive vehicle communication terminology, and assist those who would be reviewing such data files (logs, tables, and so forth) that contain this kind of stored data, could BAR possibly conform to existing standards? For consideration, report SAE J1850 PWM as “J1850PWM”

    The BAR is not aware of an existing standard. The BAR will consider the suggestion.

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28. Regarding BAR NWA-DAD Business Requirements Specification portion, Version 00.0003, 3.2.55.2. For consideration, report SAE J1850 PWM as “J1850VPW”

    The BAR will consider the suggestion.

29. Regarding BAR NWA-DAD Business Requirements Specification portion, Version 00.0003, 3.2.55.3. For consideration, report ISO 9141-2 as “ISO9141-2_KBKB” (i.e., “ISO9141-2_0808” or “ISO9141-2_9494”)

    The BAR will consider the suggestion.

30. Regarding BAR NWA-DAD Business Requirements Specification portion, Version 00.0003, 3.2.55.4. For consideration, report ISO 14230-4 as “ISO14230-4_SLOW_KBKB” (i.e., “ISO14230-4_SLOW_8FE9”)

    The BAR will consider the suggestion.

31. Regarding BAR NWA-DAD Business Requirements Specification portion, Version 00.0003, 3.2.55.5. For consideration, report ISO 14230-4 fast initialization as “ISO14230-4_FAST_KBKB” (i.e., “ISO14230-4_SLOW_8F6B”). The asterisk character (*) shall be used as a filler character in vehicles that do not properly report two full keybytes.

    The BAR will consider the suggestion.

32. Regarding BAR NWA-DAD Business Requirements Specification portion, Version 00.0003, 3.2.55.6.? For consideration, report ISO 15765 11 bit header 500 kBit/s, report as “ISO15765_500K_11bit”

    The BAR will consider the suggestion.

33. Regarding BAR NWA-DAD Business Requirements Specification portion, Version 00.0003, 3.2.55.7. For consideration, report ISO 15765 29 bit header 500 kBit/s, report as “ISO15765_500K_29bit”

    The BAR will consider the suggestion.

34. Regarding BAR NWA-DAD Business Requirements Specification portion, Version 00.0003, Section 3.2.84.5. – Please note that a newer version of SAE J1979, dated February 2012, is available for reference

    The BAR will consider the suggestion.

35. Regarding BAR NWA-DAD Business Requirements Specification portion, Version 00.0003, Section 3.2.117. – defined in this section is a case where DAD would have to comply with P2 timing, which supports robust test planning. Consider referencing the date/year of SAE J1979 as the section 6.2.4.3 “Data Not Available within P2 Timing” may change (note: the latest SAE J1979 document is February 2012).

    Thank you for your comment.

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36. Regarding 3.1.7. Hardwired configuration: The specification states, "The BAR Certified DAD Vendor shall supply the DAD in a hardwired configuration." However, there are multiple references to "wireless technology" through the document. This section needs to be clarified regarding hardwired and wireless configurations. We suggest that the DAD vendor must provide a hard wired version and may optionally provide a wireless version that is identical in OBD communication.

    Thank you for your comment.

Questions and Answers

Q001: For wired communications, you mention USB 2.0. Is it your experience that a typical USB 2.0 connector is functional after being run over with a 14000 lb. truck?

A001: The BAR will review this requirement. The BAR's intent here is to subject the DAD's to the same type of use that may be seen in a real world shop environment. Stations will be testing vehicles with up to a 14,000 lb. GVWR.

Q002: For wireless, what are your thoughts on Bluetooth, Zigbee, 900MHz packet radio, and Wifi?

A002: The BAR will consider any technology that can meet the presented requirements.

Q003: You indicate communications should still function if there is no power, so in the wireless scenario are you anticipating a battery or an external connector?

A003: In the situation where no power is being supplied to the DAD from the vehicle, the DAD must still request the data from the vehicle.

Q004: If powering from USB, do you suggest a 12V boost converter to provide ISO communications power in case 12V isn't available?

A004: In the situation where no power is being supplied to the DAD from the vehicle, the DAD must still request the data from the vehicle.

Q005: What is the objection to the J1962 metal clip?

A005: The BAR has no objection to a metal clip securing the DAD to the vehicle data port. If this is specifically prevented by the BAR's Specification, please point this out. However, we caution vendors to make sure that use of the clip does not cause mechanical interference problems on some model vehicles and new model vehicles yet to be introduced into the market place.

Q006: Why should Type B J1962 connectors be excluded, if the device is capable of handling both 12V and 24V systems?

A006: The BAR agrees and will modify the Specification.

Q007: If our device includes a J1962 connector, does that mean the entire device must be functional after being run over by a truck?

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A007: The BAR will review which portions of the DAD will be subject to this test. However, Vendor designs must ensure that cables, and the interface connector to the vehicle's OBDII System or any other part of the DAD that could be subject to drive-over damage must remain functional.

Q008: Is the simulator envisioned as an external test box or internal circuitry within the unit?

A008: The simulator is envisioned as having a J1962 connector that the DAD can plug into. The functionality of the DAD connector pins, cabling, circuitry and logic can then be tested.

Q009: What does BAR anticipate device pricing to be?

A009: The pricing of the DAD units will be market driven.

Q010: What volume of units is projected in California?

A010: Based on the BAR's 2011 Executive Summary, there are 8,833 Smog Check stations. This number can fluctuate from time to time and the BAR cannot estimate an exact number. In general, Model Year 2000 and newer vehicles with a GVWR less than 14,000 lbs. will be tested using the new devices.

Q011: How many devices might you expect to be used at a given site?

A011: The BAR does not know how many DADs will be at a given station.

Q012: I just wanted to clarify a certain point, as I read through the new DAD specification; it looks like there is basically a $10,000 "fee" to see the full DAD specification. Can you confirm that this the case?

A012: To receive the BAR DAD Interface Specification, the DAD Vendor must submit a non-refundable deposit equal to the DAD Certification Fee, which is $10,000. This deposit will be applied towards the DAD Certification Fee.

Q013: If the potential DAD Vendor feels they are not capable, or they may have difficulty making a viable DAD for this program, then they would just be out the $10,000.

A013: If the potential DAD Vendor has paid the non-refundable deposit and then decides not to submit a device for certification, the deposit will be forfeited by the potential DAD Vendor.

Q014: I have read the latest DAD specification and I am not clear on the availability of the Interface Specification. Is it available now?

A014: The BAR DAD Interface Specification is currently available in draft form. The DAD Vendor must submit a non-refundable deposit equal to the DAD Certification Fee, which is $10,000. This deposit will be applied towards the DAD Certification Fee. The DAD Vendors will work with BAR and BAR's NWA Contractor to finalize the BAR DAD Interface Specification.

Q015: Why is the certification fee $10,000? Is that an arbitrary amount? What is the justification and purpose of this fee?

A015: The DAD Certification Fee is fixed by the department based upon its actual costs of certification testing, it is calculated from the time that the equipment is submitted for testing until the time that

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certification testing is complete, and shall in no event exceed the dollar limit specified in Section 44036(b) of the Health and Safety Code. The dollar limit specified is $10,000. The BAR anticipated that its actual costs will be higher than this, but the BAR is limited to $10,000.

Q016: Why is there a requirement to pay a $10,000 deposit just to get a copy of the requirement specification? This fee seems like it will reduce competition for providers of the DAD. Is it normal for the State of California to require deposits like this? Unfortunately it has the appearance of an effort to reduce the number of companies competing for the chance to provide DAD hardware.

A016: The BAR is concerned about the security of the new BAR OIS. In an effort to maintain the confidentiality of the document the BAR has added this requirement. For potential DAD Vendors that will be producing a DAD for BAR Certification, this requirement poses no additional hardship.

Q017: Regarding the NWA-DAD Business Requirements Specification version 00.0003. In paragraph 3.2.49.1 and .2 the term "Verification of Responses" is used but not defined. What is intended?

A017: ”Verification of Responses” is defined by requirement 3.2.53 and sub-ordinate requirements.

Q018: Regarding the NWA-DAD Business Requirements Specification version 00.0003. In paragraph 3.2.95.1 requires the DAD to request confirmed DTCs from the vehicle. Is there a difference between confirmed DTC and just requesting DTCs from the vehicle?

A018: In regards to this specific requirement (Mode 3 DTC’s) the term “confirmed” could be considered redundant.

Q019: I am writing in regards to the new OBD specification. We would like to know if the workshop will be held on the July 20, 2012. Is there someone I can talk to about the details of the workshop?

A019: BAR has scheduled the workshop for Thursday, July 26, 2012 from 9:00am to 12:00 noon. It will be held in Sacramento.

Q020: With regard to wireless/hard-wired DAD configuration (sections 3.1.7 and 3.2.88), does BAR intend to allow wireless connections to the DLC? If wireless DLC connections are allowed, does that change the functional validation testing requirements (specifically 4.1.3, 4.1.4.2)? Are wireless connections between the DAD and PC allowable? Pursuant to 3.1.7, will BAR require that a wired DLC interface be supplied as a pre-requisite to certifying a wireless solution?

A020: A hard-wired DAD configuration is required. In addition, a DAD Vendor may offer a wireless DAD configuration. Requirements 4.13 and 4.1.4.2 would apply to the hard-wire DAD, but not the wireless DAD unless the wireless DAD uses strain reliefs. Wireless connections are allowed between the DAD and the PC.

Q021: In order to best satisfy the intent of section 3.2.89 as it pertains to “Future OBD” capabilities, as well as to maximize connection rate and minimize exception vehicles (with regard to connection rate calculations), it has been our experience that complete control of low-level OBD interface code is essential. Since access to device control at that level may be prohibited by third party suppliers, does BAR intend to hold all applicants for certification to the same standard regarding the capability to make whatever device modifications are necessary to adapt to future vehicle technology?

A021: The BAR will review this requirement.

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Q022: We are unable to provide comment on the DAD driver/software interface prior to reviewing the BAR DAD Interface Specification. If possible, we would appreciate the opportunity to review and provide comments on this specification.

A022: The BAR DAD Interface Specification is available in draft form. The requirements for obtaining the BAR DAD Interface Specification are presented in requirements 3.1.11.1, 3.1.11.2.

Q023: We would like to see the program timeline for the OIS concurrent with deployment of the DAD specification - as this will help guide development and reimbursement costs- namely sales of DAD. If, for example we develop a DAD and get certified, however the OIS is not deployed for another 6 months to a year, our spend/investment sits idle without recovering those costs

A023: The BAR will provide a milestone summary at the July 26, 2012 workshop and will publish this subsequent to the workshop.

Q024: Regarding 1.2 Scope: Since BAR is not purchasing anything from the Vendors and DAD would be sold directly to the stations, are there any agreements that will be required between the DAD vendors and BAR/DCA - beyond the Application for Certification and Disclosure Agreement? (See 3.1.20)

A024: The DAD Vendor will be required to meet the requirements of the BAR OBD Inspection System Data Acquisition Device Specification and the BAR DAD Interface Specification.

Q025: Regarding 3.1.7 Wired Configuration submittal and Wireless: We assume the certification fee allows for a hardwired and a wireless DAD version to be certified concurrently. Please confirm.

A025: This is correct.

Q026: Regarding 3.1.8 Updates: The intent of this section is unclear. There appears to be plans for regularly scheduled (quarterly?) updates, but the purpose of the updates seems to be to make the tool compliant with the specification. If the DAD is certified to meet the specification, what updates would be required?

A026: If at any time the BAR finds that the Vendor's DAD does not meet the requirements of the Specifications, the BAR will require an update to the Vendor's DAD. If the Vendor's DAD continues to meet the requirements of the Specifications, no update would be required.

Q027: Regarding 3.1.8 Updates: We understand IF a certain DAD is found to have a deficiency post certification, then it should be corrected via some update mechanism at no cost to the state or station. However, since potential DAD vendors currently have no knowledge of what updates may be required, we do not believe providing updates in general, at no cost is a good idea. We believe this section should be modified to clarify between updates to add BAR features (chargeable), and updates to fix deficiencies (provided at no cost to stations or BAR).

A027: The BAR agrees. If the BAR adds features or functions to the Specifications, the DAD Vendors would be allowed to charge the stations for the BAR additions to the Specifications.

Q028: Regarding 3.1.9 Updates: We assume the NWA server will be the mechanism for providing updates to the DAD firmware and/or software through the OIS computer. Please confirm.

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A028: This is an incorrect assumption. Per 3.1.9.1, the DAD Vendor shall develop a plan that is agreed to by the BAR.

Q029: Regarding 3.1.11 Interface Specification: When does BAR expect the DAD interface specification will be available?

A029: A draft version of the BAR DAD Interface is available.

Q030: Regarding 3.1.15 & 3.1.16 Response Time Metrics: How does BAR intend to standardize the data tracking and reporting for response times for the various DAD suppliers? For example, will there be a 'centralized' call center for the whole state that will be time stamping calls made to various vendors? Please describe in detail, or provide a flowchart to ensure consistent measurement across vendors.

A030: The DAD Vendors are responsible for tracking and monitoring their own response time metrics. The BAR will audit this information as necessary.

Q031: Regarding 3.1.20 Disclosure Agreement: Will BAR allow for alternative methods for providing a Disclosure Agreement generically to purchasers (vs. individually)? For example, registering their DAD via a website that requires acceptance of the Disclosure Agreement. This approach would be less cumbersome for all parties.

A031: The BAR will review this requirement.

Q032: Regarding 3.1.20 Disclosure Agreement: The purpose of the disclosure agreement is unclear because it focuses solely on the requirements for certification, which is exactly the same for all potential vendors. All participating vendors would be using the exact same form – so the purchasing parties would obtain no valuable information from the form. If however, the purpose of the form is to protect the consumer, we feel there should be more information disclosed about the company selling the DAD. For example, experience at developing OBDII interfaces, number of I/M programs using their equipment, tenure in various IM programs, financial strength, etc.

A032: The purpose of this form was to inform the DAD purchaser of the risks associated with purchasing a DAD and participating in the Smog Check Program.

Q033: Regarding 3.2.3 IP43: Is it BAR's intention for the DAD to have watertight connectors on the tool? In other words, would the water spray test be performed with the cables connected to the tool?

A033: The BAR will review this requirement.

Q034: Regarding 3.2.64 Cable Length: What is BAR's intent to limiting the cable to 15' (+/- 6")? If a vendor opted to provide an additional 10' of cable (total 25' for example), the way the specification reads, they would need to either provide 2 cables (one 15' and one 25'), or introduce an inline connection to add 10' (which would be a failure point). We believe requiring 15' cables may introduce customer dissatisfaction and/or quality problems. Our experience shows that 25ft of cable is the optimal length for OBDII testing in a shop environment.

A034: The BAR requirement is for a DAD to be offered with a total cable length of 15 feet. The DAD Vendor may offer optional lengths.

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Q035: Regarding 3.2.74 Dad Connectors: This requirement may need to be modified if the connectors at the DAD are required to be waterproof – as these types of connectors may not come disconnected by simply 'pulling'.

A035: The BAR will review this requirement.

Q036: Regarding 3.2.80 Simulator: Does BAR have a preference as to whether the device/simulator is integral to the DAD vs. a separate device that the DAD plugs into? The DRAFT spec can be interpreted to mean either method is acceptable.

A036: The DAD must plug into the simulator. Whether the simulator is physically part of the DAD or a separate device is not a requirement.

Q037: Regarding 3.2.85 & 3.2.86 Vehicle Ground: These sections are confusing. Together they suggest the DAD should be able to communicate with the vehicle even if there is no ground on either Pin 4 or Pin 5. Without a common ground between the OIS computer and the vehicle, reliable communication cannot be guaranteed. Can BAR explain what the intention of this set of grounding requirements is?

A037: The BAR will review these requirements.

Q038: Regarding 3.2.89 Future OBD Data: Will BAR allow other functionality- e.g. Live OBD Data and/or code clearing from the DAD? Could this be presented as an optional feature?

A038: The BAR believes that "Live OBD Data" is the same as the BAR specified Dynamic Data. In addition, the BAR has been evaluating the invoking of Mode $04. Any DAD functionality beyond the Specifications can be looked upon as options, however the BAR would not be evaluating any options.

Q039: Regarding 4.1.4.3 Connector: Please clarify this section. Is this a requirement to drive over the connectors on the DAD cables while they are unplugged from the DAD?

A039: The BAR will review this requirement. The BAR's intent here is to subject the DAD's to the same type of use that may be seen in a real world shop environment. Stations will be testing vehicles with up to a 14,000 lb. GVWR.

Q040: Regarding 5.1.5 Certification: Does BAR have an anticipated timeline for when the 2 week collection period will begin?

A040: The BAR will provide a milestone summary at the July 26, 2012 workshop and will publish this subsequent to the workshop.

Q041: Regarding 5.1.9 BETA Testing: Does BAR expect the selected BETA sites will have already purchased the rest of the OIS equipment (computer, printer, barcode reader) in order to be selected as a BETA site? Is there already a plan for how these BETA sites will be operating in conjunction with the existing Smog Check program PRIOR to the program being launched?

A041: Any agreements regarding other required equipment are between the DAD Vendors and the Beta Stations. The BAR is currently planning how Beta will be integrated with the existing program.

Q042: What is the timing for Alpha and BETA?

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A042: The BAR will provide a milestone summary at the July 26, 2012 workshop and will publish this subsequent to the workshop.

Q043: How will DAD's be distributed?
- a. Will they only be allowed to purchase directly from DAD supplier
- b. Can DAD Sell them thru multiple distributors
- c. Will NWA contractor offer DAD's for sale

A043: a and b) The stations will be allowed to purchase directly from the DAD Vendors. If the DAD Vendors wish to sell to multiple distributors, this would be allowed. c) No.

Q044: Will NWA contractor be allowed to only promote their choice of approved DAD device thru the NWA contractor software, or will they be required to list either a) NO devices or b) all devices.

A044: The BAR NWA Contractor will not promote any particular DAD Vendor or another. The NWA will support all BAR Certified DADs.

Q045: Has NWA contractor been selected yet? If not, when is that process taking place?

A045: The BAR has an NWA Contractor.

Q046: Will all users of DAD have persistent high speed internet connection?

A046: The stations will be required to have an internet connection. The service levels that the station experiences will be impacted by the speed that they choose.

Q047: How will DAD's be advertised to IM stations? Will they be given a list of certified DADs?

A047: The BAR is not involved with advertising the DADs. The BAR will publish a list of BAR Certified DAD Vendors.

Q048: Regarding 3.1.8.2: Requirements state that quarterly updates are required. What if no updates are necessary or requested in the period of a quarter? Can vendor simply release updates as requested if request duration is beyond a quarter?

A048: If no updates are required, then no updates are necessary. The BAR will direct when updates may occur.

Q049: Regarding 3.1.8.4: Will DAD vendor be responsible for making sure that all users of DAD device apply updates within 2 weeks of receiving approval from BAR? Does DAD vendor need to create audit trail for device updates to prove that all devices have been updated. What if users do not turn on their PC for two weeks?

A049: The BAR intends to prevent any DAD that has not been updated at the conclusion of the two week period from testing. No audit trail is required from the DAD Vendor.

Q050: Regarding 3.1.10: Will ARB consider supporting J2534 API instead of proposed proprietary DAD API if <Vendor Name> can show that it offers the same level of security and <Vendor Name> proposes ways to further improve DAD and smog check application security to reduce risk of tampering?

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A050: The BAR is not considering J2534 at this point.

Q051: Regarding 3.1.12: Will DAD vendor be responsible for only tech support related to DAD installation and troubleshooting, or will DAD vendor also be responsible for tech support related to general use of the smog check software?

A051: The DAD Vendor is only responsible for supporting their device and its interface to the OIS.

Q052: Regarding 3.2.7: Can DAD Vendor collect usage statistics?

A052: Yes.

Q053: Regarding 3.2.25.1: Can we get a copy of this Chrysler document?

A053: Yes.

Q054: Regarding 3.2.80: Does ARB want DAD to run thru complete self-test prior to each smog inspection? Can DAD vendor give NWA Contractor a command that they must execute to run self-test in their procedure prior to running each smog check? Or must DAD automatically execute self-test each time it is accessed?

A054: The NWA will prompt the Technician to initiate a DAD Functionality Check. This will primarily be done when a vehicle fails to communicate with the OIS. The purpose is to ensure that the DAD is still operating correctly and that the fault lies with the vehicle under test.

Q055: Regarding 3.2.81: Can device simulator be a separate piece of hardware that smog inspection technician has to plug in to confirm it is working?

A055: Yes. The intent is to test the DAD's pins, cables and circuits.

Q056: Regarding 3.2.85.2: What if ground is not present on pin 4 or pin 5. Does the technician have to hook up an external ground to the vehicle chassis or can vehicle be failed? If external ground is required, how would they be directed to do so? Via our software or the IM test software? Are we required to determine if the external ground is connected correctly?

A056: The BAR will review this requirement.

Q057: Regarding 3.2.88.1: is it OK if DAD Device does not offer any wireless technology?

A057: Yes.

Q058: Regarding 3.2.88: If DAD is using wireless, is it OK to require power and ground be present on the J1962 connector?

A058: For power, see requirement 3.2.84. The BAR is reviewing the grounding requirements.

Q059: Regarding 4.1.4.2: Will DAD enclosure be driven over by 14,000lb vehicle for this testing? Tests only mention cables and connectors.

A059: The BAR will review this requirement. The BAR's intent here is to subject the DAD's to the same type of use that may be seen in a real world shop environment. Stations will be testing vehicles with up to a 14,000 lb. GVWR.

Q060: Regarding 4.1.4.3: Which connectors will be driven over for the test? All? Including the USB 2.0 connector?

A060: The BAR will review this requirement. The BAR's intent here is to subject the DAD's to the same type of use that may be seen in a real world shop environment. Stations will be testing vehicles with up to a 14,000 lb. GVWR.

Q061: Regarding 5.1.8: Will BAR supply DAD smog check stations with required PC software for smog testing?

A061: The BAR will supply access to the NWA to the Beta Stations.

Q062: Regarding Section 2 32 bit BAR OIS: Is the specification intended to prohibit 64 bit versions of Windows 7? This seems to be unnecessarily restrictive. Also, what is the intention of the specification when Windows 8 is released and Windows 7 is no longer supported? We suggest you add the words "at a minimum": "…shall at a minimum run "Windows 7, 32 bit"…"

A062: The BAR is interested in minimizing the variability of the Operating Systems that will be used.

Q063: Regarding 3.2.12-13 Connectivity for pre-2000 vehicles: Since AB2289, Section 3 authorizes OBD testing of gasoline powered vehicles only for model year 2000 vehicles and newer, what is the purpose in the specification of requiring ninety-nine point nine zero percent (99.90%) connectivity for pre-2000 vehicles?

A063: The BAR anticipates that in the future, the DAD will be used to test the OBDII Systems on applicable pre-2000 vehicles.

Q064: Regarding 3.2.12-3.2.20Connectivity Rate/Successful communication: There is potential conflict between the requirement that DAD connects to vehicles even if the vehicle does not meet ISO/SAE standard, and the specification's definition of successful communication (i.e. reports all information requested per the ISO/SAE standard.). The specification needs to define the difference (if any) between "connectivity" and "communication". The 99.90% rate shall be for "connectivity", not "successful communication", so that is the key measure.

A064: The BAR will review this requirement

Q065: Regarding 3.2.64 Cable: The specification needs clarification to ensure the 15' length does not include the length of the USB or other cable connecting the DAD to the PC. The 15' cable should be between the SAE J1962 connector and the DAD, not the OIS computer as stated in specification.

A065: The BAR requirement is for a DAD to be offered with a total cable length of 15 feet. The DAD Vendor may offer optional lengths.

Q066: <Vendor's Name> is concerned about the potential for a he said/she said situation occurring between the NWA developer/provider, the DAD manufacturer, and the BAR, when a customer or shop owner has an "unfavorable" test experience, and there is a question about which

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services/parameters were sent by the BAR through the NWA to the DAD and, ultimately, to the vehicle and whether or not they were sent and received correctly at each stage of the interrogation process.

A066: The BAR is aware of the potential for this situation to arise. To assist during these situations, the BAR is collecting log files to determine what was and what was not sent and received by the NWA and the DAD.

Q067: <Vendor's Name> feels that updates to the DAD software and firmware should be handled directly by the DAD equipment manufacturer rather than by the BAR or a third party contractor.

A067: The DAD Vendors are to develop a plan for the update of the DAD hardware/firmware/software that is agreed to by BAR. The intent is that the DAD Vendors will be responsible for the updates, per the plan.

Q068: Help Desk. Can BAR further explain what roles it expects the DAD manufacturer help desk to play since the DAD manufacturer will not be responsible for the NWA software or customer PC?

A068: The DAD Vendor is only responsible for supporting their device and its interface to the OIS.

Q069: (5.2 Annual Recertification) – The description in this section indicates that after initial certification, and 90 days prior to the anniversary of the first year of certification, the DAD Vendor will meet with the BAR to discuss any issues, submit additional units for recertification, at which point if the BAR determines that the DAD continues to meet the requirements of the OBD specification, the DAD will be re-certified. However, Appendix B, Disclosure Agreement states, "at the end of the one year certification period, the DAD will be decertified". These statements of the recertification process are inconsistent and need to be aligned. The description in "5.2 Annual Recertification" seems the correct process and description of the BAR's intent for same.

A069: The Disclosure Agreement also states that if the BAR Certified DAD Vendor does not resubmit for yearly recertification, the DAD will remain decertified. The BAR believes that the two sections are in agreement.

Q070: Section 1.1 Purpose – term "OBD Community" definition. Does this cover only folks who create I/M test lane products?

A070: If an interested party believes that they can comply with the requirements of the Specifications, they are welcomed to participate.

Q071: Section 1.1 Purpose – regarding BAR is aware of shortcomings, shouldn't BAR acknowledge known vehicle build or ECU communication issues and use those vehicles as "DAD test cases"?

A071: The BAR has attempted to solicit this type of information. However most of the information regarding problematic vehicles that the BAR has received is anecdotal in nature. If interested parties are able to provide information on problematic vehicles, the BAR would accept the information.

Q072: Section 1.2 Scope – a difference from DAD spec 1.01 to this spec is a change from IE 8 or Firefox 3.6 to IE 9. Can BAR elaborate on what drove this decision?

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A072: The NWA uses the IE 9 engine to render the applications pages; therefore IE 9 is required to be on the computer. As IE is updated, BAR will evaluate the feasibility of updating the NWA.

Q073: Section 1.2 Scope – what are the plans for the creation of BAR's Next Generation electronic Web Application ("NWA")? Is it an internal BAR task, or will BAR go to Industry from a solution? Will the job be let out by contract, or? What is the timeline for this project?

A073: The BAR has an NWA Contractor and development is underway. The BAR will provide a milestone summary at the July 26, 2012 workshop and will publish this subsequent to the workshop.

Q074: Section 2 – Environmental conditions of "shock, vibration, and environmental exposure" are mentioned here and also Durability Section 3.2.x (pp. 15). Does BAR have a specific shock specification to reference? Does BAR have a specific vibration specification to reference? Does BAR have a specific environmental exposure (believed to be sunlight related) specification to reference?

A074: The BAR does not have a reference specification for shock or vibration, however 3.2.72 is the requirement and 4.1.4.1 is the test that the BAR will use. The environmental exposure requirement (3.2.3) is under review by the BAR.

Q075: Section 3.1.8.1 – what is the definition of an "update"? Are updates only for bug fixes? If BAR submits a specification change request, where the result is a change that goes into a hardware or software update, is this considered "no cost"? We realize the "specification" can change; however, there is no mention that this requirement would have to address said change request(s) at "no cost".

A075: If the BAR adds features or functions to the Specifications, the DAD Vendors would be allowed to charge the stations for the BAR additions to the Specifications.

Q076: Section 3.1.9 – considering there are many methods to update DAD HW, FW, and SW, is there a BAR preference or guideline for how an update shall be performed? Or will the DAD vendor be responsible for proposing the mechanism to update the DAD HW, FW and SW?

A076: The DAD Vendors are to develop a plan for the update of the DAD hardware/firmware/software that is agreed to by BAR. The intent is that the DAD Vendors will be responsible for the updates, per the plan.

Q077: Section 3.1.11 – Will the DAD vendor have input into the creation/development of the BAR DAD Interface Specification?

A077: Yes.

Q078: Section 3.1.12 through 3.1.16 (Technical Support) – (a) Clearly, the inspection stations needs support services. In the case of the BAR OIS, it seems it would be most practical if the NWA suppliers provided level 1 technical support services and the DAD supplier provides level 2 (more related to DAD failures). In our experience, if the inspection station is having a problem with the system, it will be difficult for the inspection station staff to assess if the problem is with the NWA, the DAD or just some routine PC problem. It makes sense (particularly in the supplier certification business model envisioned by BAR) for all certified DAD supplier to effectively provide this level of technical support.

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(b) Technical support services of the scope described in the DAD specification are typically covered under a technical support contract. Is BAR planning to enter into support agreements with each certified DAD supplier?

A078: Help Desk services will be supplied by the BAR, the NWA Contractor, and the DAD Vendors. Each entity will be responsible for support in their area. The BAR is not planning to enter into support agreements with each certified DAD supplier.

Q079: Section 3.2.7 – consider modifying the current sentence to read "The BAR Certified DAD Vendor may choose to collect a DAD-to-Vehicle communication log file from the DAD if needed to perform system diagnostic purposes."

A079: The BAR is adding an additional requirement for the DAD to collect the DAD-to-Vehicle communication log file and to deliver the DAD-to-Vehicle communication log file to the NWA when requested.

Q080: Section 3.2.11 – the requirement here is to request OBDII SAE J1979 defined data from all hybrid vehicles which are equipped with the OBDII system. There may be some hybrid vehicles that do not report OBD II data when the gasoline engine is not running. What is the approach for properly moding the vehicle into the correct operating condition such that the hybrid vehicle emission system reports OBD II data? Otherwise, a communication failure condition could be flagged here, when indeed the condition is not correct.

A080: The NWA will look for minimum RPM limits, which can be set to zero if need be. In addition context sensitive help will be provided to the Technicians to inform them on how to test the vehicles.

Q081: Section 3.2.12 through 3.2.15 – in review of the non-diesel fueled vehicles, MY1996 to 1999 cover the period where OEMs were adjusting to a new communication means, as well as obtaining exemptions from CARB with respect to OBD II serial communication implementation(s). On some MY2000 and newer vehicles there are also special cases that have made their way into the field. Known OBD II communication issues have be identified and documented. For these reasons, maintaining a 99.9% connectivity rate may not be possible. Further, this requirement mentions vehicles that are "…non-compliant with the required SAE and ISO standards…" Is BAR defining in this requirement a need to get 99.9% communication rate even if DAD serial communication has to be implemented in a manner just to make it work (and possibly outside OBD II serial communication definition documentation)?
How will BAR measure the 99.9% connectivity rate?

A081: Yes, it is the BAR's intent to collect OBDII information on as many vehicles as technically feasible. The BAR has included a mechanism to adjust the connectivity rate if necessary. Please see the paragraph under "Connectivity Rate" for information on how the BAR will deal with measuring the connectivity rate.

Q082: More, for non-Diesel engine vehicles, the breakdown of model years is 1996-1999 and 2000 and newer? What is the reasoning behind this?

A082: The BAR considered vehicle technology and program needs in this decision.

Q083: More, For Diesel engine vehicles, the breakdown of model years is 1998-2003 and 2004 and newer? What is the reasoning behind this?

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A083: The BAR considered vehicle technology and program needs in this decision.

Q084: Section 3.2.16 – Regarding "connectivity rate" the subject appears to need more discussion and definition within this document. The list of OBD II vehicles inside the California Smog Check program is large and of varied complexity (eg. one emission ECU vs. five emission ECUs). A DAD test plan could be devised where known compliant vehicles from the above ranges could be tested and results obtained to determine DAD pass/fail acceptance. With respect to OBD II vehicle types, could a test plan that prescribes such an approach satisfy a "connectivity rate" definition for BAR?

A084: The BAR feels the Specifications are appropriate in these areas.

Q085: Section 3.2.21.2 – does it seem reasonable to set a P2 min = 0 when this is different than what the ECU (and communication specification) is indicating? It is realized that this is required to retrieve data from a noncompliant vehicle (reference statement made earlier about "connectivity rate"), yet, this condition is a known condition and is properly being called out (as are those conditions of noncompliance mentioned in sections 3.2.22.1 and 3.2.23.1). The point here is that if there is no known recall fix from the OEM, then all known noncompliant departures should follow this same approach of disclosure.

A085: To the extent the BAR is aware of noncompliant vehicles where the noncompliance has been documented and that there is no available remedy from the vehicle manufacturer, the Specification, where feasible, has been written to make the DAD tolerant of those noncompliant vehicles. As an alternative, the BAR considered simply referencing the disclosed noncompliances and requiring the DAD Vendors to determine on their own how best to accommodate the vehicles. However, given the current plan to have multiple brands of DADs certified, the BAR chose to prescribe methods to deal with the noncompliances to increase the likelihood of all DADs performing identically in lieu of individual solutions that may have varying degrees of success and result in different data collected for the identical car. Further, the BAR has no illusions that all noncompliant vehicles or anomalies have been documented and thus, this specification cannot call them out or address them directly. In those cases, the BAR is relying on the past experience of the DAD Vendors to have addressed many more issues than those that are clearly known and will be using the connectivity rate specification to ensure such vehicles are addressed.

In this particular example regarding P2min, ISO 9141 allows a vehicle to use either a P2 specification of 25 msecs or 0 msecs as indicated by the keywords. The known noncompliance involves a vehicle that returns keywords indicating 25msecs but in actuality, uses a P2min of 0 msecs. Given that the very same protocol allows a 0 msec P2min, it does not seem unreasonable nor particularly risky to require the DADs to use a 0 msec P2min regardless of the keywords returned from the vehicle. For compliant vehicles that use 25msecs, having the DADs 'listen' for messages starting at 0 msecs instead of 25 msecs is not expected to have any detrimental impact.

Q086: Section 3.2.28 and sub-bullets – allowing each vendor to implement its own "default" automatic protocol detection order will lead to a lack of national I/M standardization for acquiring OBD II data. Shouldn't the default automatic protocol detection order be defined by Industry? For example, the I/M Flowchart, which is a guidance that has been available for several years, may be a more thorough solution for this. Note that prior to existence of the I/M Flowchart guidance, there were external test equipment connecting to ECUs using a non-valid data link, and thus the data was also not correct. Because there are ECUs out in the field which can connect to more

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than one OBD II protocol, this led to confusion by tool users until the flowchart presented an ordered communication strategy.

A086: While the order that protocols are tried should not technically matter with compliant vehicles, various DAD Vendors have indicated to the BAR in the past that the order they use has been optimized to deal with various anomalies or for speed of establishing communication and that order has been refined with many years of experience. To that extent, the BAR did not feel it was appropriate to dictate the order of protocols and rather that it would be beneficial to use the experience gained by the DAD Vendors. Several States have expressed increased success in their program by being able to identify the expected protocol of the vehicle and try that protocol first so the BAR has included provisions for that. Such a mechanism has been used by other States to speed up establishing communication as well as to partially address some known noncompliant vehicles that have one or more emission-related ECUs that support multiple (or a different) protocol than other ECUs. Beyond that, however, it seems appropriate to use the experience of the DAD Vendors as to what order the DAD tries protocols to achieve the highest degree of communication success.

Q087: Section 3.2.30.1 – this requirement first mentions changing the order of protocol order attempts. Does research of field operation as well as application of good programming qualify this as a sound requirement? Second, changing tolerances on repeat 2nd or later initialization attempts makes software development, and more specifically, the number of test cases, go up considerably. So, does SAE J1699-3 and vehicle communication implementation requirements play a role here? If the vehicle has a communication anomaly(s), for the sake of connectivity, should the DAD have to be built so loose with so many special retry cases? An approach like this can increase cost and extend schedule.

A087: As noted in the Specification, the intent is to maximize successful communication with in-use vehicles and to leverage off the experience of the DAD Vendors as to any workarounds, tricks, or other features that the DAD Vendors have developed over the years. Accordingly, this section does not prescribe certain things other than that the DAD Vendors need to maximize successful communication rates and the BAR is open to whatever mechanisms the DAD Vendors have developed over the years to achieve that. The items listed were simply suggestions for the DAD Vendors to consider that have been used by other DAD-like equipment in the past but the BAR is not mandating the use of any of these items in particular. SAE J1699-3 does not play a direct role here other than that since the deployment of that tool and testing requirements by the California Air Resources Board in the 2005 model year, the number of vehicles with communication anomalies or noncompliances has greatly diminished.

Q088: Section 3.2.30.2 – regarding simultaneous communication, there are known anomalies where a single ECU will respond to OBD II data requests on multiple protocols, where returned OBD II data on one of the protocols is not accurate. Does research of field operation qualify this as a sound requirement? More investigation may be required. Also, reference comment to section 3.2.28.

A088: See response to previous question.

Q089: Section 3.2.31 – there is no mention of message responses that are returned using one protocol on one data link connection. This requirement could be interpreted as a case where a vehicle gives external test equipment the impression that more than one data link connection is available with OBD II data, thus returning valid and invalid Mode $01 data from an ECU on two different data links. Such a scenario is not acceptable.

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A089: This section is targeting two scenarios which have been observed in other State's inspection data. The first involved establishing communication with the vehicle on one of the OBD protocols but no OBD data was actually supported on that protocol. Such a scenario indeed would be a noncompliant vehicle but to the extent such a scenario exists and that the vehicle does actually support all of the required OBD information on one of the other OBD protocols, this requirement to terminate communication on the first successful protocol and attempt to establish communication on one of the other protocols seems a prudent and easy step to take (and is not unlike what J1699-3 does by trying all protocols even if it has already previously established communication on one of the others). And, as indicated in the Specification, if a second attempt again only establishes communication on the same protocol and still has no OBD data supported, the inspection proceeds.

The second scenario involves a commonly observed item in several other States IM data where, for whatever unknown reason, communication has not successfully established with all of the emission related ECUs as indicated by the only readiness monitor supported being the comprehensive components bit (e.g., is successfully communicating only with a transmission ECU). Again, the Specification, in an attempt to increase the likelihood of getting all of the OBD data out of the vehicle, includes requirements to terminate communication upon recognizing this scenario and attempt communication on all other OBD protocols before returning to this protocol to see if another protocol could result in more ECUs responding (or even re-establishing communication on the same protocol could result in all ECUs responding). Again, if the same data is observed after attempting this, the inspection proceeds.

Q090: Section 3.2.32.1 – what functional need is driving the 10ms requirement? For what (or which) vehicle communication protocol does BAR desire this requirement? How does BAR know that an "as built" vehicle ECU can indeed accept a request in such a timeframe? The data being requested for an I/M test (eg. Monitor Status, DTCs, Commanded MIL, VIN, CalID) is considered more "static" than "dynamic", therefore to have such a tight specification can increase complexity and cost for no clear benefit.

A090: The intent of this section is to require the DAD to have the capability to capture a set of multiple dynamic (not static) parameters at the fastest possible sampling rate. This capability is intended to be a future method to help identify various fraudulent activities during testing and this capability would be undermined if the DAD was slower than it need be in being able to request the data from the vehicle. As far as the question regarding how the BAR knows as built vehicles can accept such a request in this timeframe, it should be noted that the Specification is clear that the DAD needs to be able to send out the next request for data within 10 msecs of the vehicle being ready to accept such a request (as defined by the relevant SAE and ISO specifications) so such a requirement is clearly within SAE and ISO specifications for communication. That said, the BAR is open to alternative suggestions as to what time should be used or even alternative criteria that would be able to similarly distinguish DADs that can request subsequent information as soon as possible from DADs that, for whatever reason, are excessively slow to send out subsequent requests. On older protocols, such delays can be very significant in reduced data sampling frequency and greatly reduce the usefulness of this feature.

Q091: Section 3.2.34.2. – There are some early diesel engine powertrain control modules that were found in the field to have incorrect NRC $78 handling. Given the earlier desire to have noncompliant vehicles "supported" by DAD, desiring communication to vehicles in this category should again be revisited (for the reasons previously mentioned).

A091: The intent behind this requirement is to address known noncompliant vehicles that do respond with an NRC $78 before correctly reporting the requested data in modes or messages where the

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SAE specifications technically do not allow them (e.g., upon requesting VIN). Requiring the DAD to be tolerant to an NRC $78 in all modes and messages in lieu of only for calibration verification number (CVN) requests as required by SAE specifications did not appear to be a risky implementation that would accommodate these known noncompliances. However, to the extent the commenter is aware of other noncompliant or compliant vehicles that would be problematic with such a design, the BAR is open to alternative suggestions to address the issue.

Q092: Section 3.2.39 – what is BAR's definition of a non-standard protocol? Further, what is BAR's definition of a permutation of a standard protocol? Referenced earlier, these scenarios will make for a complex system with exceptions, will require a very elaborate test plan, and overall, it is not even clear what communication protocols could fall into this category. CCR 1968.2 requires SAE J1979 E/E diagnostic test modes on top of a) SAE J1850 VPW, b) SAE J1850 PWM, c) ISO 15765-4, d) ISO 9141-2, and e) ISO 14230-4. These protocols are defined through industry documentation that is publically available. Other than the possibility of allowing known communication scenarios, any departure from the previous a thru e list of protocol standards, which could be defined as "not allowed exceptions", should not be allowed.

A092: As noted in the answer to question 087, the BAR's intent is for the DAD Vendors to use their experience with initialization methods to maximize successful communication and indicated that the BAR was open to whatever mechanisms DAD Vendors wanted to use to achieve that including going outside of the SAE and ISO specifications to tolerate noncompliant vehicles. And, as noted, none of the suggestions 3.2.30 are mandatory requirements. However, to the extent a DAD Vendor does use a method that involves attempting communication in a manner beyond what SAE and ISO specifications prescribe (e.g., accepting responses later than allowed, accepting incorrectly formatted responses to a Start Communication request, etc.) after previous attempts to initialize within SAE and ISO specifications have failed, 3.2.39 requires DAD Vendors to denote that they used such an initialization variant by naming the protocol differently. This will allow the BAR to see how often and which particular vehicles need such a mechanism to successfully establish communication as well as potentially allow more discernment for fraud detection.

Q093: Sections 3.2.42 thru 3.2.xx – in section 3.2.40 the DAD shall request Mode $01 PID Count, but did not specify use of PIDs $00, $20, $40, … $E0. Further, it was not determined if the DAD shall determine supported PIDs, then return data for known supported PIDs when/if the desired data is requested by the NWA.

A093: The determination of PID Count will be done by the NWA. The DAD will request PIDs $00, $20, $40, … $E0 when requested by the NWA. The NWA will determine which PIDs are supported and which PIDs to request.

Q094: Part two of this is, what shall the DAD return if the NWA software requests PID data that is not supported by any of the Vehicle ECUs?

A094: See Requirement 3.2.36.

Q095: Part three of this is, what shall the DAD return to the NWA software if there are more than one emission controller that supports the same PID number?

A095: The DAD shall report the data from all ECU's. The NWA will reconcile the multiple ECU data.

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Q096: Section 3.2.60 – what is the need for In-Use Monitor Performance Ratio data and how is it applicable to a BAR OIS I/M emission test analyzer system?

A096: The BAR believes that this data will be useful.

Q097: Section 3.2.65 – if there is a technical limitation for CAN communications diagnostic stub, and if BAR's requirement is longer than 15 feet, how shall this requirement be fulfilled? The requirement is not fully clear and needs more definition.

A097: The BAR requirement is for a DAD to be offered with a total cable length of 15 feet.

Q098: Section 3.2.80 – Is the BAR envisioning another unit that is similar to the DAD that is to be used for simulating protocols?

A098: The simulator is envisioned as having a J1962 connector that the DAD can plug into. The functionality of the DAD connector pins, cabling, circuitry and logic can then be tested.

Q099: Section 3.2.84.2. – What are allowed means of alternate powering of DAD unit? Note: Battery voltage is required as a reference for K-Line.

A099: The BAR has no requirements on what alternate powering method is used.

Q100: Section 3.2.86.1. – SAE documentation specifies that J1962 pin four shall not be used for ground. Requirement must be revised. Also, Pins 4 and 5 are now allowed to be connected together inside the test equipment per J1962. ISO 9141 references pin 5 for ground; pin 5 is used as a reference for all signal measurements.

A100: With respect to Section 3.2.86.1 of the Specification that requires the use of pin 5 (when available) or pin 4 (if pin 5 is determined to be ungrounded) for signal ground, SAE J1962 requires the use of pin 5 for signal ground so the only requirement going above and beyond SAE specifications is the requirement to attempt to use pin 4 as the signal ground if pin 5 is determined to be not grounded. The BAR's intent, as stated many times, is to maximize communication with as many vehicles as possible. Vehicles have been built without proper grounding of both pins 4 and 5 and this feature was intended to enable communication with such vehicles. In practice, the BAR is aware of many vehicles, as designed by the vehicle manufacturer, that have pins 4 and 5 directly connected on the vehicle side to each other. Further, the BAR is aware that some external tools exist that can and do use pin 4 as signal ground and can successfully establish communication on cars that do not have pin 5 grounded. Lastly, it is not clear to the BAR that a requirement to design the DAD to be able to use pin 4 in lieu of pin 5 for signal ground would necessitate that the DAD has to be designed to connect the two pins internally in the DAD. For example, it seems possible that the ground source could be switched between pins 4 and 5 depending on which is connected to ground on the vehicle side. That said, the BAR is open to further discussion of this topic at the Workshop if DAD Vendors are aware of adverse impacts that may result as a result of this requirement including unsuccessful communication with compliant cars, other electrical impacts, increased cost of the DAD, or any other practical considerations.

Q101: Does BAR wish to control engine speed automatically using a serial data command? Or, does this request have to do with simply discarding data that is captured outside of the desired_engine_speed ± 100rpm?

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A101: The BAR will not control engine speed automatically using a serial data command.

Q102: Section 4.1.1 – What types of chemicals, liquids, etc. will be used to test for corrosion?

A102: The BAR will be using water and other chemicals found in a typical shop environment.

Q103: Section 4.1.4.2, 4.1.4.3, and 4.1.4.3 – is the spec value of the vehicle 14000±500lbs? Or, is the spec value a vehicle which is capable of a 14000lb GVWR vehicle weight ±500lbs?

A103: The vehicle used will have a GVWR of 14,000 lbs. ±500lbs.

Q104: Regarding BAR NWA-DAD Business Requirements Specification portion, Version 00.0003, Section 3.1.1.4 – What is meant by requesting data by NWA to the DAD? Is this simply calling out a requirement where NWA software can make data requests to DAD?

A104: The BAR and BAR's NWA contractor developed the draft BAR DAD Interface Specification. This Requirement is addressing the purpose of the BAR DAD Interface Specification.

Q105: Regarding BAR NWA-DAD Business Requirements Specification portion, Version 00.0003, Section 3.1.1.5 – Similar to above…what is meant by responding with data by DAD to the NWA software? Is this simply calling out a requirement where NWA software can accept data responses from DAD?

A105: Yes.

Q106: Regarding BAR NWA-DAD Business Requirements Specification portion, Version 00.0003, Section 3.1.1.6 – To confirm, this is a feature which logically tests data that DAD has currently received from OBD II emission ECUs against the expected data that DAD should receive from the OBD II emission ECUs?

A106: The Requirement is to ensure that there is a mechanism to determine that the data collection is complete.

Q107: Regarding BAR NWA-DAD Business Requirements Specification portion, Version 00.0003, Section 3.2.1 – In the event of a conflict, if this NWA-DAD specification overrides national or global vehicle communication standard document, it would seem that BAR does not expect the DAD device to be compliant to such industry "build-to" documents, such as SAE J1979. Is this the correct approach for BAR to take?

A107: The intent is to maximize successful communication with and data collection from in-use vehicles. The BAR is attempting to leverage off the experience gained from previous OBD endeavors and the DAD Vendors as to any workarounds, tricks, or other features that the OBD Community and the DAD Vendors have developed over the years.

Q108: Regarding BAR NWA-DAD Business Requirements Specification portion, Version 00.0003, Sections 3.2.11, 3.2.16, 3.2.18 – is there a preferred encryption/ decryption algorithm to use?

A108: The Requirements were based on an older approach to the collection of the data. These requirements are no longer valid and will be revised.

Q109: Regarding BAR NWA-DAD Business Requirements Specification portion, Version 00.0003,

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Sections 3.2.23, and 3.2.26 – is there a preferred encryption/ decryption algorithm to use?

A109: The Requirements were based on an older approach to the collection of the data. These requirements are no longer valid and will be revised.

Q110: Regarding BAR NWA-DAD Business Requirements Specification portion, Version 00.0003, Section 3.2.32.2 – does it seem reasonable to set a P2 min = 0 when this is different than what the ECU (and communication specification) is indicating? Points to the proposed discussion of an "approved" nonconforming vehicle list.

A110: Please see the response to question 085 above.

Q111: Regarding BAR NWA-DAD Business Requirements Specification portion, Version 00.0003, Section 3.2.33.1 – Points to the proposed discussion of an "approved" nonconforming vehicle list.

Section 3.2.34.1 – Points to the proposed discussion of an "approved" nonconforming vehicle list.

A111: The BAR will review the requirement.

Q112: Regarding BAR NWA-DAD Business Requirements Specification portion, Version 00.0003, Section 3.2.35.3 – Points to the proposed discussion of an "approved" nonconforming vehicle list.

A112: The BAR will review the requirement.

Q113: Regarding BAR NWA-DAD Business Requirements Specification portion, Version 00.0003, Section 3.2.53 – Why shall every request message have a requirement to be repeated three times? Are there vehicles in the field that behave in this manner? If so, should they be mentioned in a Test Plan? And perhaps on an approved non-compliance vehicle list?

A113: The request will not be repeated three times for all messages, only for those specified.

Q114: Regarding BAR NWA-DAD Business Requirements Specification portion, Version 00.0003, Section 3.2.62 – it is not clear why the PID Supported PID is not proposed to be used in performing a PID count. Also please reference response given by <Vendor's Name> for the DAD specification, section 3.2.42

A114: This is how the BAR has chosen to count the PIDs. The determination of PID Count will be done by the NWA. The DAD will request PIDs $00, $20, $40, … $E0 when requested by the NWA. The NWA will determine which PIDs are supported and which PIDs to request.

Q115: Regarding BAR NWA-DAD Business Requirements Specification portion, Version 00.0003, Section 3.2.72. – If indicated as supported, shall PIDs $20, 40, … E0 be included (or not included) in the list?

A115: The determination of PID Count will be done by the NWA. The DAD will request PIDs $00, $20, $40, … $E0 when requested by the NWA. The NWA will determine which PIDs are supported and which PIDs to request.

Q116: Regarding BAR NWA-DAD Business Requirements Specification portion, Version 00.0003, Section 3.2.100.1 – requesting data even though the vehicle OBD II emission system indicated it was not supported. Shouldn't this be another case for an approved noncompliance vehicle list?

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A116: The BAR will choose when to exercise this functionality.

Q117: Regarding BAR NWA-DAD Business Requirements Specification portion, Version 00.0003, Section 3.2.101.5.1 – Recording data even though the vehicle OBD II emission system indicated a less-than-expected character count. Shouldn't this be another case for an approved noncompliance vehicle list?

A117: This is how BAR has chosen to store the data.

Q118: Regarding BAR NWA-DAD Business Requirements Specification portion, Version 00.0003, Section 3.2.101.6 – trying to understand the use case here: receive a VIN from any OBD II emission ECU that might be capable of reporting VIN even if a Mode $09 IT $00 response indicated that VIN was not supported from any ECU. Then, when received, per this specification, a lower case "u" is to be appended to the VIN chars. Will this cause more confusion and discussion? How does the use of used/reman ECUs fit into this discussion? What if an ECU was replaced yet the receiving vehicle's VIN was not written into the ECU?

A118: The BAR is interested in discussing this matter at the Workshop.

Q119: Regarding BAR NWA-DAD Business Requirements Specification portion, Version 00.0003, Section 3.2.142.2 – are ASCII 0x7C and 0x2F a preferred industry standard means of delimiting data? The use of 0x7C "vertical bar", along with 0x2F "forward slash", are specified in other areas of the specification as well.

A119: The BAR has chosen which delimiters to use.

Q120: Regarding BAR NWA-DAD Business Requirements Specification portion, Version 00.0003, Section 3.2.154 to 3.2.157.3 – what is the need for In-Use Monitor Performance Ratio data and how is it applicable to a BAR OIS I/M emission test analyzer system?

A120: The BAR believes that this data will be useful.

Q121: Regarding BAR NWA-DAD Business Requirements Specification portion, Version 00.0003, Section 3.2.60 and sub-bullets – is the goal of the functionality test to confirm that the communication circuits are complete? Or, is the goal to check communication circuits and communication components? Use of the term "simulate" implies something more than what is asked here, and also increases cost. Also please reference response given by <Vendor's Name> for the DAD specification

A121: The intent is to test the DAD's pins, cables and circuits.

Q122: Regarding BAR NWA-DAD Business Requirements Specification portion, Version 00.0003, Functional Validation Tests, Question: how could this section not be applicable? The NWA software works with the DAD, therefore, the complete system would need a Test Plan and executed Test Results.

A122: The section is appropriate to the DAD. The NWA software has more requirements than what is presented in the NWA-DAD Business Requirements Specification. These additional requirements include integration testing with the Vendor's DADs.

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Q123: Regarding BAR NWA-DAD Business Requirements Specification portion, Version 00.0003, Question: the NWA software does not have a Certification and Decertification on its own? Is overall Certification and Decertification left to the DAD specification (which does contain a section on Certification and Decertification)?

A123: The NWA will undergo User Acceptance Testing (UAT) by the BAR. The DAD is the only component subject to Certification and Decertification.